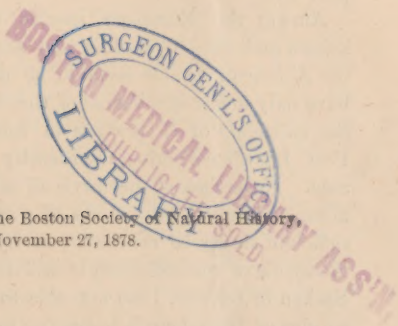


Hagen (H. A.)



From the Proceedings of the Boston Society of Natural History,
Vol. XX, November 27, 1878.

ON LARVÆ OF INSECTS DISCHARGED THROUGH THE URETHRA.
BY DR. H. A. HAGEN.

The larva of an insect which had been discharged through the urethra by a country boy, was sent by Dr. Cutler of Waltham, Mass., to Mr. S. Henshaw, and kindly communicated to me for investigation. The larva is somewhat squeezed and flattened, but otherwise in good condition and belongs to the Dipterous genus *Homalomyia*. In comparing the larva with the larvæ of Diptera in the biological collection of the Museum in Cambridge (which contains now 380 species of Diptera, more or less fully illustrated) I found two lots of the same kind. One is labeled from putrifying fish, the other, as found in a bottle containing rotten alcoholic fishes. In looking through the American literature I found one paper of the late B. D. Walsh, "larvæ in the human bowels" (*Amer. Entomol.*, II, 137) seeming to treat of similar larvæ. The description and the figure make it nearly doubtless that the larva from Waltham is identical with the *Homalomyia Wilsoni* Walsh. There is only one difference: the larva of *H. Wilsoni* has on the third segment on each side only one filament, while mine has on each side a pair of filaments just as in the following segments. But as all larvæ of *Homalomyia*, as far as I know,

and at least all I have seen, and all figured and described in Europe, possess a pair of filaments on each side of the third segment, I am inclined to believe that the second filament was overlooked by Mr. Walsh. This is the more probable as it is considerably smaller than the other one; and as the lens used by Mr. Walsh was an exceedingly poor one.

Among the European species the larva of *H. scalaris*, well-known and often figured, is very similar, except that the filaments in the American species seem to be more feather-branched. But as I have only a few specimens of the European species before me and the existence of *H. scalaris* in America is proved by specimens in Prof. Loew's collection, the identity of the two species is very probable. Nevertheless the larvæ of all related species are very much alike, and only by the study of a material with raised imagos can a sufficient surety be reached. As by far the largest part of the Anthomyidæ of the collection is still in the hands of Baron von Osten Sacken in Europe, I am not able to give a satisfactory record of the species of Homalomyia belonging to our fauna.

"The cases which I have to relate (begins the well-known Dr. Bateman in his account of the larvæ of two species of insects discharged from the human body) do not possess any practical importance, and the only degree of interest that may be attached to them, must be derived from the uncertainty of medical records on the subject in question. This uncertainty induces me to bring them forward. For whether we consider, on the one hand, the difficulty of accounting for the origin of many of those animals, which make their nidus in the human body, or the variety of indistinct and fabulous histories of such animals which have been detailed on the other, every instance of the existence of those which are not usually found there, but the species of which can be ascertained, and therefore the probable origin pointed out, seems to be worthy of being recorded."

These words are to-day just as true as seventy years ago, for really not much has been done to elucidate the origin of similar cases, except that the occurrence is more or less fully stated in medical periodicals.

Rev. F. Hope published forty years ago a list of one hundred and eight cases, which he found recorded by different authors. Of them thirty-five belong to Coleoptera, two to Dermaptera, six to Lepidoptera, one to Neuroptera, sixty-four to Diptera. Among the Coleoptera the meal-worm, *Tenebrio molitor*, is recorded in nine

cases; of the Diptera thirty-seven cases belong to the Muscidae and twenty to Æstridæ. The composition of the list must have been very difficult; nevertheless it is far from representing all published cases, and sometimes not thoroughly reliable. Concerning the locality affected thirty-six cases belong to the stomach and the intestines, and seven to the urinary organs.

The sex of the patients is given in seventy-one cases, thirty-three men, and thirty-eight women. It is of interest to state that the cases in which Coleoptera are observed show twenty-one women against only four men; the cases in which Diptera are observed, twenty-nine men against seventeen women. But it should be remarked that the Dipterous cases included fifteen belonging to *Oestrus*, of which fourteen belong to men, who are obviously more exposed to attacks by those flies. Deducting those cases, we find both sexes equally often infested by Diptera. I have tried to bring together all known cases in which larvæ or perfect insects are recorded to have been discharged through the urethra, and give a list of twenty, only three of them published later than Hope's list, in which therefore ten were not included. The sex is recorded for fifteen cases, nine men and six women. The discharged animals show nine Diptera, six Coleoptera, two Oniscus, and a larva without nearer indication. Of the Diptera four belong to *Homalomyia*, one to *Tipula*, one to *Eristalis*; of the Coleoptera three to *Tenebrio molitor*, one to *Ptinus fur*, the only imago of an insect recorded, and two to a larva similar to *Curculio nucum* (!).

The value and reliability of the mentioned cases are far from being equal. In the appended literature, I have stated the particular reasons, which lead me to accept only sixteen of them, and consider only four of these as of much value. Unless it is supposed that mistakes in such observations have not been very generally committed, we are obliged to believe that the discharged larvæ have really been in the bladder, though this organ is the least probable abode for the larvæ of winged insects. Farther, as of course the only open way to the bladder is the urethra, the observed animals must have entered through it. There are indeed true intestinal worms belonging to the genus *Strongylus*, which, originating in the kidneys, thence enter the bladder, but it is equally obvious that these roads are impassable for larvæ living in the bowels. To those unacquainted with the study of medicine it will seem incredible that things should be put purposely into the human body; but there are cases reported in medical litera-

ture, which surpass all belief. The article "*corpora aliena in corpore humano*" in Rust's Surgical Archives, written by the celebrated Dr. Dieffenbach, gives a large number of the most incredible and nevertheless carefully observed cases.

Concerning the urinary organs, we find in a table drawn up by Professor Civiale of Paris (*Gazette des Hôpitaux*, 1838), a collection of one hundred and sixty-six cases of foreign bodies in the bladder, in which the following articles were removed from it; twenty-five needles and pins, one bodkin, two ear pickers, six fragments of bones, five teeth, eighteen sounds or bougies flexible and rigid, twelve pieces of wood, six needle cases, one cork, thirteen plant stems, ears of wheat and straws, nine pieces of lint, six pipe-stems, three glass tubes, various kinds of fruits, feathers and hair. Since that time up to 1861, he has extracted nineteen sounds or bougies, a leather strap, two pen-holders, an artist's brush handle, two pieces of bone, a piece of tendon, a lamp wick, a barometer tube, and a medal.

If it is therefore proved that persons in some morbid disposition are themselves apt to put foreign bodies in the bladder, we are allowed to conclude that at least some of the insect cases belong to this category; though no insect or insect larva is mentioned among the bodies removed from the bladder. That an intentional deception has sometimes occurred, is a well-known fact, but other cases are beyond this suspicion, and therefore it is fair to suppose that unpremeditated mistakes have been made in observation. Cases in which such mistakes were developed are recorded, — one by Linnaeus himself. His student Rolander, suffering from dysentery, was believed to have discharged a large number of living Acari, but Linnaeus discovered that the wooden drinking cups in the room were swarming with these insects as well as the one used. Siebold speaks of a similar case in which living specimens of *Plinus fur* were believed to have been discharged, while later it was discovered that the leather cushion of the stool was infested with the living beetles. The view that the discharged larvæ may have already been in the not thoroughly cleaned vessels, or that they afterwards fell in by chance, perhaps from the cover, is adopted as probable by LeClerc, Rudolphi, Bremser and others. This is doubtless the fact in the cases recorded of *Oniscus* and the *Eristalis* larva, and Dr. Bateman recalls judiciously, that the recorded larvae of *Muscidae* may have been generated in or near the water closet, as they often live in such places. If we adopt this explanation for another set of cases, there still remain some in

which, during or after a severe disease of the bladder and the urinary passages, the discharge of some animals gave instantaneous relief, and cure followed. I should have believed these cases more important, if exactly similar ones of instantaneous relief after a discharge of larvae from the bowels had not been observed, the larvae (*Homalomyia*) being just the same as those often recorded as discharged from the bladder. Dr. Howship in his tract (*Observations on the diseases of the urinary organs*, London, 1816), has published very striking cases of this class.

Last not least, it is important to notice that all the observed cases belong to men, none to animals, and that in the numerous dissections which have been made the presence of larvae in these organs has never been stated, and that as far as I know, no museum possesses such larvae, professed to have been found in the bladder.

There are certain limits, which can not be transgressed without becoming absurdly credulous, in believing facts, which are said to have been observed. The bold manner in which Linnaeus has purified natural history by throwing out such facts, is certainly one of his greatest merits and has greatly advanced natural history. That he has gone sometimes too far, and that some of the rejected facts have later proved true, is comparatively without consequence. I confess, that I do not believe that larvae of insects can live in the bladder, and that consequently they are not discharged through the urethra — till the contrary is proved by indubitable evidence.

The excellent and well-known works of C. A. Rudolphi and J. G. Bremser, contain the literature up to 1819. Nevertheless as the aim of both authors is to give a history of the true intestinal worms, all others which belong to the so called *Pseudohelminthes* are treated only as a side matter. There exist some works, in which the older literature is said to be largely collected.

J. Schenck von Grafenberg, *Observat. medicar. rarior. Libr. VII.*, Francofurti, 1600, (and later Edit.),— Marcellus Donatus, *De medica historia mirabili. Libr. VI.* Venetiis, 1597. 4to.—P. Borelli, *Histor. te observat. medicophysicarum Cent. IV.* Francofurti, 1670, 8° and Cent. I, 1676.—Hercules Saxonia. (title of the work unknown to me)—and W. G. Ploucquet, *Initia Bibliothecae medico-practicæ et Chirurgicæ realis. Tuebingæ*, 1793-97. 4°. I am not sorry that I am unable to compare these works; perhaps there is no copy of them here, as Rudolphi designates them simply as a kind of stuff, of which very little is worthy to be studied, and Bateman, *Edinb. med.*

Journ. VII, 47, speaks of the very questionable authority of those authors whose credulity is at least equal to their learning and industry.

LIST OF CASES IN WHICH INSECTS ARE SAID TO HAVE BEEN DISCHARGED
THROUGH THE URETHRA.

No. 1. Ambr. Paré. Œuvres. 1582. fol. reimpr. Paris, 1841, III, 35. The celebrated father of surgery says L. Duretus is affirmed to have discharged after a long sickness a living animal through the urethra similar to an Oniscus, of red color. LeClerc says similar to a Hog or Wood Louse. A second case reported by Paré is entirely fabulous. I have not seen the figure of Paré, which is omitted in the reprint as being very bad.¹

No. 2. Nic. Tulp, Observationum medicarum Libr. III. Amstelodamii, 1641. 8vo. Lib. II, cap. I, p. 178. Undeviginti vermiculi emicti. Tab. VII. f. 2. A prominent physician in Amsterdam, convalescent after an intermittent fever, discharged in one week through the urethra without pain twenty-one larvæ. The figure is not good, but perfectly recognizable as a larva of Homalomyia, probably *H. scalaris*. In the description the tail is taken to be the head. Tulp says that this larva is very similar to those discharged by Lud. Duretus.

No. 3. Lib. II, cap. LI, p. 179. Cottidianus vermium mictus. Tab. VII, f. 3. A lady fifty years old discharged at the end of a sickness on several days five or six small worms, two of them large, of the size of the joint of a finger. The figure shows probably the meal worm, the larva of *Tenebrio molitor*. The medical prescription to prevent a farther propagation of the worms is carefully noted down, and consists of three medicines containing together a whole pound of twenty different drugs. No wonder that the worms could not stand so uncivil a reception, almost equal to an attack with Krupp guns!

No. 4. G. C. Gahrlied von der Muehlen, Ephemerid. Acad. Natur. Curios., 1694, Dec. III, Ann. I, Observ. 82, p. 126-127, fig. An old gentleman after a chronic inflammation of the bladder discharged a few days before his death, through the urethra, a fatty ball containing a larva similar to those of Microlepidoptera, pale flesh-colored, with six legs, very active. The larva lived twelve days, and was then accidentally killed by closing the box in which it was preserved. The description of the case is somewhat odd, the figure

¹ While my paper has been passing through press, I have been able to examine two old original editions with the figures, which are not recognizable.

bad, and not recognizable, as the larva shows large eyes, four pairs of legs along the body and a forked tail. However it represents the larva of an insect.

No. 5. M. F. Lochner. *Disquisitio de vermibus cum u.ina excretis. s. l. et a. 4°.* fig. 4. This work, quoted from Boehmer's bibliography, is not known to me, nor to Rudolphi. Lochner was a physician in Nuremberg in 1690. I cannot find what Boehmer has copied from; perhaps the citation is one of the many blunders in Boehmer's work.

No. 6. Dan. Clerici (LeClerc). *Historia naturalis et medicalatorum lumbricorum etc.* Genevae, 1715. 4°. Engl. transl., 1721. 8°. I have seen only the translation. He gives, p. 264, a very reasonable account of worms excreted with the urine; he quotes some cases related by older authors, and inclines to believe them to be untrustworthy. The pl. XIII (crinous hairworms, such as are excreted with the urine), taken from Etmueller, Ruysch and Leeuwenhock is wanting in the copy.

Fr. Ruyschii *Thesaurus anatomicus.* Amstelod., 1721. 4°. 1, 32. A nobleman after a strong pain in the perinaeum discharged with the urine a large number of small bodies somewhat ovoid in shape and like grains, out of which developed small flies, figured pl. 3, fig. 5. It is stated in the same place, that he had seen similar ones in the urine of a woman, and he believes that the larvae had entered the bladder from outside through the urethra. The figure is bad, but shows the chrysalis of a fly and the fly itself. As there is an older edition from 1701 (Hope quotes 1, 54) perhaps the case related by LeClerc is the same.

No. 7. Dan. Turner. *Philosoph. Transact.*, 1725, xxxiii, 410. Two cases of insects voided by the urinary passage. The first case belongs to the intestinal worms (*Strongylus*), the second quotes an animal, probably an *Oniscus*, discharged by a lady. The short description is very insufficient. Rudolphi says, probably the larva of an insect.

No. 8. Dr. Werlhof. *Commerc. litt. Nor.* 1735, 282. *Vermis. cum urina excretus.* I have not seen this paper, but Rudolphi states that the worm is the larva of an insect.

No. 9. Mr. Veau de Launay, in Rozier *Observ. de physique*, 1792, xxxi, 158. *Observations sur des vers rendus avec l'urine.* pl. 1, fig 4. Rudolphi says the animal is *Oniscus asellus*. In the only copy

here the plate is wanting. The description seems to me to designate the larva of *Homalomyia*. The sex of the patient is not given.

No. 10. Dr. Stringham, Professor in Columbia College. New York Medical Repository, 1805, VI, 262, and VII, 342. Reports the case of a lady whose sufferings were relieved and cured after the passage of a great number of nondescript insects, which he considers to belong to the genus *Actinia*. The very rough figures resemble an *Oniscus*.

No. 11. V. L. Brera. *Memorie fisico-mediche sopra i principali vermi del corpo umano*, etc. Crema, 1811. 4°. p. 106, pl. 1, f. 26-27. A new species of the genus *Cercosoma* had been discharged with the urine by a lady. Prof. Canali in Perugia, dissected and described it in *Giornale letterario di Pisa*. The unique type came in the collection of Brera and was described and figured. Bremser, p. 264, states that this worm is the well-known larva of *Eristalis pendulus*, and gives a copy of the figure on the title page. The proof that the larva, which was found in the chamber vessel, had been really discharged by the lady, is wanting. Bremser's remarks about this history are rather sarcastic. If all, he says, found in the chamber vessel must be considered as discharged, I have discharged in a sickness a pair of candle snuffers, which was found in the vessel, and which nobody would admit to have thrown into it.

J. G. Bremser. *Ueber lebende Wuermer im lebenden Menschen*. Wien, 1819. 4°. In this well-known and prominent work, chap. XII gives in an appendix the so-called Pseudohelminthes found in the human body but not belonging to the intestinal worms. The figures are given on the title page. In the same way (Bremser, p. 261), Brera in his before quoted work, Part II, has treated the insects found in men as *Vermi metastatici*. Dr. Bremser's critical remarks for some species are very important.

C. A. Rudolphi *Entozoorum sive vermium intestinalium historia naturalis*. Amstelod., 1808-10. 8°. 2 vol. In the bibliographical part of this celebrated work, I, 164, the published cases on larvae voided through natural passages of the human body are enumerated with short critical remarks. In chap. XXII, *De insectis animalium parasiticis*, p. 524, he gives his opinion about the cases in which it is professed that larvae were discharged through the urethra.

"Qui in vesicam urinariam veniant, me fugit, casusque plurimos, ni omnes, in quibus insectorum larvæ in urina repertæ dicuntur, ad praestigias referem. Larvæ aliaque insecta lotio misso facile illabi

possunt, inde etiam omnium sæpissime, *Oniscus asellus* in eodem repertus est, quem medici nonnunquam pro verme aut insecti larva habuerant; matula forsan impura adhibita fuit, aut alius hinc inde error locum habuit."

No. 12. William Henry, M. D. Edinburgh Medical and Surgical Journal, 1811, VII, 147. Case in which the larvae of an insect were voided in the urine. A robust man aged about 62, frequently voiding gravel and once discharging a small calculus, complained of a stabbing pain about the neck of the bladder. Later he voided along with his urine the larvae of an insect, pretty closely resembling the common maggot. They were not only alive but vivacious, and besides those which were entire, the heads and bodies might be observed, detached from each other. Of the entire insects, he has frequently discharged three or four at once. Mr. J. L. Philips of Manchester examined the larvae and found them to be coleopterous and much like *Curculio nucum*. Three of the larvæ are figured of natural size and magnified; they are coleopterous.

In a note it is stated, that Dr. Monro, Jr., has met with a case precisely similar, and possesses specimens of the larvae in his museum.

No. 13. T. Bateman, M. D. Edinburgh Med. Surg. Journal, 1811, VII, 41, pl. An account of the larvae of two species of insects discharged from the human body. The larvae figured are two *Tenebrio molitor*, two *Homalomyia scalaris*, and a third perhaps of the same species. The larvae were discharged from the bowels, but Dr. Bateman quotes in his excellent paper also the cases published of larvae discharged from the bladder and concludes, "it must be acknowledged that the bladder is the least probable nidus for the larvae of winged insects."

No. 14. Leroux. Journal de Méd. Chir., Paris, 1806. A man suffering with nephralgia discharged with the urine larvae, which from the description belonged probably to Diptera. I was unable to compare this paper; it is quoted in E. F. Germar, Magaz. d. Entom., 1818, III, 418. A case is quoted in the same place from Howship, Tract. observ., on the disease of the urinary organs, London, 1816, 8°, treating of larvae discharged from the bowels. In Germar's Magazin, I, 134, the case published by Mr. W. Henry is briefly referred to after a notice in Göttinger gelehrte Anzeigen, Novbr. 7, 1812, p. 1779. The same article is again reprinted by J. Gistel in Bayerische National Zeit., 1836, no. 199, p. 826.

No. 15. Kirby and Spence. Introduction to Entomology, I, 239. (Peoples edit., p. 74.) A larva belonging to the Diptera, perhaps to the Tipulidæ, with which however it does not so entirely agree as to take away all doubt, was passed by a person (sex not given) in Ipswich with the urine. It was alive and extremely active. The larva is carefully described.

No. 16. Jer. Van Rensselaer, M.D. Silliman's Journ., 1828, XIII, 229. On a larva liberated with urine. The larva was discharged by a girl, and is, according to the short description, a coleopterous larva, probably that of *Tenebrio molitor*.

Rev. L. Jenyns. Trans. Entom. Soc., Lond., 1839, II, 152, pl. xv, f. 1-8. Notice of a case in which the larvae of a dipterous insect, supposed to be *Anthomyia canicularis*, were expelled in large quantities from the human intestines. The larvae, according to the figure and the description, belong probably to *Homalomyia scalaris*, and were discharged by an old clergyman in enormous numbers from the bowels. One passage in the paper induced me to suppose that sometimes the larvae were also discharged through the urethra, and for this reason the paper is quoted. However the fact is not stated in an unquestionable manner.

No. 17. Dr. Erismann. London Medical Gazette, 1837, xx, 846, (recorded after Schmidt's Jahrb. du Med. and Schweizer, Zeitsch., II, 1.) A robust young man was attacked suddenly by symptoms of the most acute inflammation of the bladder. After suffering intensely for five days, he found himself unable to pass his water, and this evidently from some mechanical obstruction in the urethra. Before a catheter could be introduced, he discharged a body of the size of a pea covered by purulent matter, which was found to contain a little beetle, *Ptinus fur*, which died directly on the exposure to the atmosphere.

The communication resembles those previously quoted from Gahrlied, and the final passage endangers even more the trustworthiness of the case.

No. 18. Dr. Schrader in Rust's Magaz., 1824, XIX, 487 and 1826, XXI, 26, describes the larva of a fly discharged with the urine as a snail. I have not seen the paper, which is related and corrected in Siebold's article on Pseudoparasites.

Rev. F. W. Hope. Trans. Ent. Soc., Lond., 1840, II, 256. On the insects and their larvae occasionally found in the human body. The tables were printed first in the London Med. Gazette, 1837, xx, April

15, p. 94-95; April 22, p. 142-143; April 29, p. 172; May 6, p. 406-207; May 13, p. 255; May 20, p. 286-287, and are reprinted in the Tr. Ent. Soc., with the addition of three columns: Station in life, Date of occurrence, Specimens preserved. Rev. Mr. Hope in some additional remarks proposes that the name Scholechiæsis used by Kirby and Spence for all diseases occasioned by the larvae of insects, should be retained only for those arising from Lepidopterous larvae. The disease by coleopterous larvae he calls Canthariasis, and those by dipterous larvae, Myasis. On pl. xxii, f. 2-5, are represented various larvae from the human body contained in the museum of the College of Surgeons; fig. 2 is a worm, or at least no insect, f. 3, 4 are larvae of Homalomyia, f. 5 is *Oestrus hominis*.

The paper is important as the only list in existence and quotes 108 cases; seven of which belong to the urinary passages. The quotations in the paper are rather lax and not over correct. Dr. Koch in Ammon's Monatsschrift f. Medicin., 1838, i, 542, has given also a list of the larvae observed in the intestines of men.

No. 19. R. Owen. Trans. Ent. Soc., Lond., 1840. Proc. p. 7, April 6. Report of a dipterous larva, distinct from *Anthomyia* and wanting the lateral filaments, several of which had been discharged from the urinary bladder of a patient.

Th. v. Siebold, in R. Wagner, Handwörterbuch d. Physiologie, 1844, ii, 683, gives in his excellent article, Parasites, a chapter on Pseudoparasites. He speaks at some length on insects discharged from the bladder, and is strongly inclined to disbelieve the trustworthiness of the published cases. Prof. v. Siebold remarks, p. 688, that he possesses a larva of *Clerus formicarius*, communicated to him as an urine-worm, but it doubtless fell in the vessel by some chance.

No. 20. Dr. Cutler of Watertown, Mass. A larva of *Homalomyia* discharged with the urine by a country boy.

I by no means pretend that the list of authors enumerated by me presents a full record of all published cases, but I have gone through a large number of books and periodicals without finding more. Nevertheless a careful perusal of medical journals will doubtless furnish other published cases.

In four of the twenty recorded cases I was unable to examine the works myself. The value and trustworthiness of all the cases are very far from being equal. The two with *Oniscus* (Turner and Stringham) and the one with *Eristalis* (Brera), the case by Lochner of which nothing is known should be at once discarded. But even of



the sixteen cases left one gives nothing more than assertion that the author observed cases similar to described ones. Werlhof is only accepted on Rudolphi's authority. Concerning the remaining ones only four (Tulpius, Ruysch, Gahrlied, Erisman) seem to be in so far less doubtful, as the animals were probably discharged in the presence of the physician. In Tulpius' case the patient and the recorder were both prominent physicians. In all other cases the patients only affirm that they have discharged the described animals.

NOTE. Since the above paper was read, Dr. Cutler has written to Mr. Henshaw, that the boy, induced by what Dr. Cutler had told him, examined the privy carefully and found several specimens similar to the one which he was supposed to have passed, and therefore thinks he may have been deceived in the matter.